Application of a competitiveness model for permanent free trade zones in Colombia

Aplicación de un modelo de competitividad para las zonas francas permanentes en Colombia

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Abstract

This article aims to show the importance of determining the level of competitiveness of the Permanent Free Trade Zones (PFTZ) in Colombia, from the applicability of a business competitiveness model that seeks to analyze their competitive potential and establish strategies for the optimal development in this sector.

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A diagnosis of the permanent free trade zones in Colombia was carried out, in which aspects such as: the subsectors in which the free trade zones are focused, percentage of participation, number of industrial users of goods or services, promotion of free trade zones through electronic means, types of certifications they have, among others; Immediately afterwards, the Business Competitiveness Model of Manuel Humberto Jiménez was applied to 10 PFTZ of Colombia, which allowed determining the level of competitiveness of these, it should be noted that for the application of the model, a questionnaire of 22 questions was designed that were applied to some of the senior managers of the free trade zones and were complemented with information obtained from the web pages, public information of the Association of Free Trade Zones of the Americas (AFTZA) with a specific focus on the Colombian case and the National Association of Foreign Trade (ANALDEX).

It was found that the most critical factor of the Special Permanent Free Trade Zones (PFTZ) and that produces delays in the development of their competitiveness is related to the factors: financial management, science and technology; Regarding the first, most of the PFTZ s present low profitability, and regarding the second factor, it is necessary to intensify the implementation of science and technology projects that promote development and competitiveness in the regions where they are installed.

This research made it possible to carry out a diagnosis of 10 PFTZs in Colombia, identifying the critical factors in these areas, among which promotional activities by electronic means are highlighted, having a Colombian seal of sustainable construction, outsourcing of processes, the number of foreign companies installed and financial factors. However, efficient criteria were identified such as constant growth in sales, having different certifications both in the logistics chain and with quality standards, little customs transit time of the merchandise, the use of inventory systematization programs and frequent participation in international events.

On the other hand, through the implementation of the Business Competitiveness Model of Manuel Humberto Jimenez, it was possible to show that the PFTZs are not competitive from the point of view of the model, these regimes in Colombia have a decline in their competitiveness in the market, which it should serve as an alert for government institutions to carry out projects to improve competitiveness in this sector.

Keywords: *Colombia, Diagnosis, Competitiveness Model, Permanent Free Trade Zones*

Resumen

En el presente artículo se pretende mostrar la importancia de determinar el nivel de competitividad de las Zonas Francas Permanentes (ZFP) en Colombia a partir de la aplicabilidad de un modelo de competitividad empresarial que busca analizar el potencial competitivo de las mismas y establecer estrategias para el óptimo desarrollo en este sector.

Se realizó un diagnóstico de las zonas francas permanentes en Colombia, en el cual se analizaron aspectos como: los subsectores en los que se enfocan las zonas francas, porcentaje de participación, número de usuarios industriales de bienes o servicios, promoción de las zonas francas a través de medios electrónicos, tipos de certificaciones con las que cuentan, entre otros; acto seguido se aplicó el Modelo de Competitividad empresarial de Manuel Humberto Jiménez a 10 ZFP de Colombia, que permitió determinar el nivel de competitividad de estas; cabe resaltar que para la aplicación del modelo se diseñó un cuestionario de 22 preguntas que se le realizaron a algunos de los altos directivos de las zonas francas y se complementaron con información obtenida de las páginas web, información pública de la Asociación de Zonas Francas de las Américas (AZFA) con enfoque específico en el caso Colombiano y de la Asociación Nacional de Comercio Exterior (ANALDEX).

Se encontró que el factor más crítico de las Zonas Francas Permanentes Especiales (ZFP), que produce retrasos en el desarrollo de su competitividad, está relacionado con los factores: gestión financiera, ciencia y tecnología; en cuanto al primero las ZFP en su mayoría presentan una baja rentabilidad, y en cuanto al segundo factor hace falta intensificar la implementación de proyectos en ciencia y tecnología que promuevan el desarrollo y competitividad en las regiones donde se encuentran instaladas.

Esta investigación permitió realizar un diagnóstico de 10 ZFP en Colombia, identificando los factores críticos de estas zonas, dentro de los cuales se resaltan las actividades de promoción por medios electrónicos, contar con sello colombiano de construcciones sostenibles, la subcontratación de procesos, el número de empresas extranjeras instaladas y factores financieros. No obstante se identificaron criterios eficientes como el constante crecimiento en ventas, contar con diferentes certificaciones tanto en la cadena logística y con estándares de calidad, poco tiempo de tránsito aduanero de la mercancía, el uso de programas de sistematización de inventarios y la frecuente participación en eventos internacionales.

De otro lado, a través de la implementación del Modelo de Competitividad empresarial de Manuel Humberto Jiménez, se pudo evidenciar que las ZFP no son competitivas desde el punto de vista del modelo, estos regímenes en Colombia tienen un declive de su competitividad en el mercado, lo que debe servir como alerta para que desde las instituciones gubernamentales se realicen proyectos tendientes a mejorar la competitividad en este sector.

Palabras clave: *Colombia, Diagnóstico, Modelo de Competitividad, Zonas Francas Permanentes*

Introduction

At present, competitiveness is a determining concept both for the development of the regions and for the country, since when referring to competitiveness it can be said that it is the ability to innovate, design, produce and develop strategies with the same resources of the most efficient way and standing out from other competitors present in the environment. According to the National Competitiveness Report 2018-2019 (Consejo Privado de Competitividad, 2019):

> Colombia must accelerate the pace to achieve structural changes and thus greater competitiveness, and this is demonstrated in the Global Competitiveness Index of the World Economic Forum where Colombia went from position 57 among 135 countries to 60 among 140 countries, as well as in the Yearbook of Competitiveness World Bank of the Institute for Management Development, the country fell from position 51 in 2015 to 58 in 2018 and in the Doing Business ranking of the World Bank, from position 51 to 59 in the same period.
>
> These measurements were able to identify that the country must advance as a priority on three fronts: improving the enabling conditions that allow increasing productivity, optimizing the functioning of markets and betting on business innovation, which includes greater investment in science, technology and innovation (STI).

Considering the above, Free Trade Zones are a development element that allow to enhance the competitiveness of a country. Some studies developed such as: "The characteristics of small and medium-sized enterprises in the Batam free trade zone" (Hendrawan, 2012), "An evaluation of the port free trade zone in Taiwan" (Chiu, Lirn, Li, Lu, & Shang, 2011), "Combining industrial free trade zones and regional free trade agreements: lessons from the Mexican experience" (Matthews & Sargent, 2001), "Free Trade: treaties and the new order" (Sánchez, 2016); allow to show

that the implementation of a free trade zone can impact several aspects, allowing to improve environmental variables so that the region is more competitive and productive, however not all territories have the facility for its implementation or do not have a strategic geographic location that exalt the potentials of these zones and allow them to fulfill the objectives for which they were created.

The establishment of Free Trade Zones in Colombia had a great reception since 1956 when they were potentiated as drivers of the economy, which generated the creation of these in several cities of the country. However, according to the "Technical Bulletin for foreign trade and movement of goods Free Trade Zones (PFTZ), Colombia has 106 free trade zones divided into 38 Permanent Free Trade Zones (PFTZ) and 68 Special Permanent Free Trade Zones (SPFTZ)" (DANE, 2020); leading the sector to an unstable economy, since all of these are not operating in their entirety, nor are they generating the expected development in terms of social impact, industry development, technology transfer, infrastructure, among other aspects.

"Many of the Free Trade Zones have managed to meet the investment goal by 140%, however they have presented a deficit of 48% in job creation" (Portafolio, 2014), this being one of the main factors that delays the full development of free trade zones, a figure that has a negative impact considering that these covers 60% of the national territory, which means that this sector does not generate the desired competitiveness.

For these reasons, this study seeks to answer the question: What is the level of competitiveness of the Permanent Free Trade Zones in Colombia?

To this end, the purpose of this study consisted in determining the level of Competitiveness of Permanent Free Trade Zones in Colombia, for which two specific objectives were developed,

the first related to the diagnosis of the PFTZ under study and the second corresponding to the application of a Business Competitiveness Model designed by the author Manuel Humberto Jimenéz, which analyzes competitiveness based on six factors: Managerial Management (MM), Commercial Management (CM), Production Management (PM), Internationalization (I), Science and Technology (ST), Financial Management (FM).

This study will help identify those Permanent Free Trade Zones that take better advantage of the factors that allow them to develop greater competitive advantages. Likewise, the results of this study offer operator users to focus on factors that allow them to perform and optimize the quality of their processes and improve the effectiveness of planning, generating strategies to attract new markets.

Materials and methods

The development of this study was carried out on 10 Permanent Free Trade Zones (PFTZ) in 2017, "as of 2019 there were 38 PFTZ in Colombia" (DANE, 2020); However, when collecting the information, it was only possible to obtain information on 10 of these.

> Decree 383 of 2007 establishes three types of free trade zones: permanent, permanent special and transitory. Permanent or multi-user Free Trade Zones are considered as a defined geographical area within the national territory with special regulations and where industrial or commercial activities of goods and services are developed. In addition, for this type of Free Trade Zones, minimum amounts of investment and job creation are established. (Moscoso & Castellanos, 2018)

To determine the most competitive Permanent Free Trade Zone in Colombia, a descriptive study based on the deductive method is carried out, where it is intended to identify elements of

a common company, such as: the organizational structure, type of customer with which it operates, marketing channel, pricing policy, supply, demand, among others. For this purpose, in the first phase of the investigation, a questionnaire of 22 questions is applied to some of the managers of these free trade zones, likewise additional information is obtained from the web pages of these zones and public information from the Association of Free Trade Zones of the Americas (AFTZA) with a specific focus on the Colombian case and the National Foreign Trade Association (ANALDEX) in order to explore the problem and determine the variables that influence the competitiveness of the Permanent Free Trade Zones in Colombia. As a second phase, the business competitiveness model proposed by Manuel Humberto Jiménez was applied.

The following table shows the phases of the investigation, the models used, and the variables analyzed:

Table 1. *Phases, models and study variables.*

Investigation phase	Model used	Variables analyzed
1. Permanent Free Trade Zones Diagnosis	Structured questionnaire according to the methodology of Hernandez, Fernandez and Baptista which indicate that "the most logical process to create an instrument is to move from the variable to its dimensions, then to the indicators and finally to the items" (Hernández, Fernández, & Baptista, 2010)	• Subsectors in which the PFTZ focuses • Determination of the prices of the PFTZ • Visualization of the sales of the PFTZ • Percentage of market share • Number of industrial users of goods and / or services they have • Promotion of PFTZs through electronic means • Type of certifications that it has • Means of access to the free trade zone (land, air, sea) • It has a Colombian seal of sustainable constructions • Depreciation of equipment used • Subcontracting of the latest technology or higher capacity equipment • Percentage of participation of outsourced processes • Number of direct jobs • Number of foreign companies installed • Agility in customs transit processes of merchandise for the different users of the PFTZ • Participation of the PFTZs in international events

		• Projects developed by the PFTZs in the regions where they are installed • Use of inventory systematization programs • Educational level of managers • Year of experience of managers in the sector • Number of languages that managers speak • Types of decision-makers used in decision-making • Profitability of the PFTZ • Level of indebtedness • Liquidity • Cash flow • Credit quota • Return on Investment (ROI)
2. Application of the Business Competitiveness Model	Definition of the model: COMP= MM (GC+GF+GP+CT+I) Where: COMP = Competitiveness, MM= Managerial Management, CM = Commercial Management, FM= Financial Management, PM= Production Management, ST = Science and Technology, I = Internationalization Each factor is scored with a maximum score as follows: MM = Between 0 and 1 CM = 30 points FM = 20 points PM = 20 points ST = 10 points I = 20 points With a maximum score of 100 points (p.) And the rating scale will be: Between 0-69 p. = Not competitive Between 70-79 p. = Low competitiveness Between 80-89 p. = Competitive Between 90-100 p. = Very competitive (Jiménez Ramírez, 2006)	• Managerial Management • Commercial Management • Financial Management • Production Management • Science and Technology • Internationalization

Results and discussion

- Diagnosis of 10 Permanent Free Trade Zones in Colombia

For the presentation of these results, the variables were divided according to the 6 factors established in the Business Competitiveness model: Commercial Management (CM), Production Management (PM), Internationalization (I), Science

and Technology (ST), Managerial Management (MM), Financial Management (FM). The following tables show the main results obtained from the diagnosis:

Table 2. *Results of the diagnosis of Permanent Free Trade Zones (PFTZ)*

Variable	Most representative answer	%
Commercial Management		
Subsectors in which free zones are focused	Manufacturing, Automotive, Agroindustry, Building Materials, logistics and storage	51%
Determination of PFTZ prices	Business objectives	60%
Visualization of sales of products and services	Constant growth	90%
Percentage of participation of the PFTZ	Greater than 10%	40%
Number of users of goods and / or services	Between 1-30 users	60%
Promotion of PFTZs through electronic means	Does not respond / does not know	80%
Types of certification available to the PFTZ	BASC certification, ISO 9001	90%
Means of access to the Free Trade Zone	Land access	70%
Colombian seal of sustainable constructions	Does not have	50%
Production Management		
Depreciation of PFTZ equipment	5-year maximum depreciation	80%
Subcontracting of latest technology equipment or greater capacity	Yes	80%
Percentage of contracting of outsourced processes	Less than 1%	40%
Number of direct jobs	10,000 jobs approximately	70%
Internationalization		
Number of foreign companies installed in PFTZ	Between 4-7 companies	60%
Customs transit process of the merchandise	Between 1 -3 days	80%
Participation of the PFTZ in international events	Attend frequently	70%
Science and Technology		
Projects developed by the PFTZs in the region in the last 5 years	Yes	50%
Use of inventory systematization programs	Yes	80%
Managerial Management		
Free trade zone managers educational level	Specialization, Master	70%
Years of experience of managers	Between 8-11 years	30%
Other languages that managers speak	English	50%
Decision-maker types	Decision maker 1: Presents a conservative attitude with aversion to risk	50%
Financial Management		
Cost effectiveness	Between 1 - 20%	50%
Debt level	Greater than 50%	40%
Liquidity	<= $ 100,000,000	70%
Acid test	Between 1 - 5	71%
Cash flow	<= 100,000,000	50%
Credit limit	Greater than 50%	80%
Return on Investment (ROI)	Between 1 - 20%	70%

Regarding the diagnosis of the Permanent Free Trade Zones analyzed, it was possible to show in the Commercial management factors that 51% focus on five specific subsectors: manufacturing, automotive, agro-industry and construction materials, logistics and storage; 60% determine prices taking into account business objectives, which shows that these are the main axis of the Free Trade Zones, since this factor is above the other variables that are normally used to establish prices such as its costs and competition. 90% say that sales are in constant growth and 40% have a market share greater than 10%, which proves that the sector is on the rise. Regarding the number of industrial users of goods and / or services, 60% state that they have between 1 and 30 users, which is good for these areas, since in a few words it is related to the companies installed in the Free Trade Zone that produce, transform or they assemble goods or companies that offer logistics, communication and transportation services, among others, that have tax, customs and foreign trade benefits, but which, due to these same characteristics, give dynamism to the PFTZs. Likewise, regarding the promotion of these areas through electronic means, 80% did not respond, which was a limitation to conclude this question, however it can be indicated that in this factor the companies do not have priority and only they limit themselves to having a web page with general information about the free trade zone and its services.

90% have implemented some type of certification, standing out the BASC standard for its control and security standards in the logistics chain and the ISO 9001 standard for its quality standards, which generates a comparative advantage for free trade zones, turning this into a benefit for them. Regarding the means of access to the PFTZ, it is evident that 70% have good land accesses, which is logical if one considers that by law, they have the obligation to build or fix the roads that lead to the port more nearby. Furthermore, it is evident that very few have air or sea access, which becomes a competitive advantage for those that offer various accesses to the area. Finally, in the commercial aspect,

it is identified that 50% do not have sustainable construction stamps, only a small proportion is aware of the importance of having these stamps and contributing to the environment.

Regarding the production management factor, this sector has state-of-the-art machinery, this being a priority, since this is a variable that drives their development and in turn generates a comparative advantage for them, which is evidenced by the fact that 80 % of the PFTZs use machinery that depreciates over 5 years and is in constant renewal. On the other hand, there is a high trend in the sector (80%) for the subcontracting of equipment, giving priority to this activity before buying, in the same way this allows determining the interest of the companies in the sector under study in having cutting edge technology; Regarding the percentage of participation of outsourced processes, it is an unreliable option, since it is evident that only 40% do so and at levels less than 1%, in turn meaning that companies do not have total trust in companies external, having greater preference in that they themselves carry out their operations. 70% of the studied Permanent Free Trade Zones generate around 10,000 direct jobs, this being a positive factor, since they indicate that they are generating development in the regions where they are installed.

When studying the internationalization factor of Permanent Free Trade Zones in Colombia, it is known that 60% have an average between 4 - 7 foreign companies installed within the free territory, it is also important to highlight that a large part of these are supported by agreements with the ports and with the National Tax and Customs Directorate (DIAN), facilitating the customs transit of the merchandise for the different industrial users of goods and / or services, taking an average of 1-3 days to carry out the procedures, making these agile processes in 80% of the PFTZs. On the other hand, 70% of these free trade zones participate in international events.

Regarding the Science and Technology factor, only 50 % carry out development projects for the region and for itself such as Data Center construction, software development, implementation of joint Social Responsibility actions with business groups located in the region. free trade zone, among others; On the other hand, the use of inventory systematization programs is used by 80 % of the free trade zones, which allows greater optimization in the processes.

The management factor of Permanent Free Trade Zones in Colombia indicates that 70 % of managers have a high educational level, as well as 50 % of a second language, 30 % of them have an average experience in the sector between 8 - 11 years, this being a positive variable; on the other hand, it is evident that 50 % are inclined towards a type of conservative decision-maker, leaving aside the preference for taking risks.

Finally, in the analysis of the financial management of the PFTZs, it is determined that 50 % have a profitability between 1-20 %, it should be noted that only one has a profitability higher than this value and the rest have a negative profitability which indicates that the decisions taken in the commercial, production, science and technology and internationalization factors have not been significant, therefore causing the loss of new investors. Regarding the level of indebtedness, 40 % have an indebtedness greater than 50%, which indicates that the participation of creditors in their pecuniary provision is representative.

On the other hand, with respect to liquidity, 70 % of the Free Trade Zones have a liquidity of less than $ 100 000 000, which can be worrying when complying with their obligations; On the other hand, in the study of the acid test, it is evidenced that 71% have a good short-term payment capacity without the need to liquidate or sell their inventories, which generates a go-ahead for

managers; However, the cash flow trend shows that 50 % have a good capacity to generate cash flows both in their inflows and outflows of capital, in parallel 70% of the free trade zones claim to have an ROI between 1-20% , which shows a low indicator of financial gains for this sector according to the effort they must make in the development of their operations.

- Level of Business Competitiveness of the ZFPs

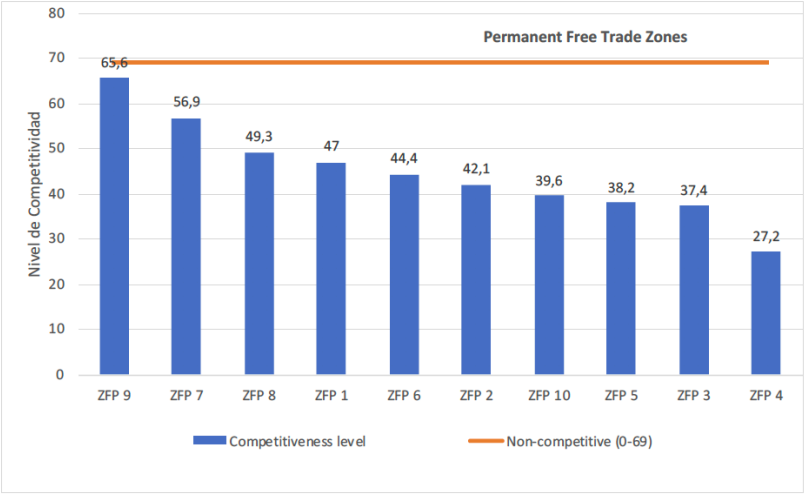
For the development of this chapter, we proceeded to establish qualification and scoring criteria for each of the variables and factors of competitiveness: Commercial Management, Production Management, Internationalization, Science and technology, Managerial Management, Financial Management, followed immediately by the rating of each of the PFTZ under study.

Table 3. *PFTZ Business Competitiveness Level by Management*

	Ratings obtained by factor in each PFTZ									
Factor	PFTZ 1: Zona Franca del Pacífico S.A	PFTZ 2: Zona Franca Parque Central	PFTZ 3: Zona Franca Bogotá	PFTZ 4: Zona Franca Palermo	PFTZ 5: Zona Franca Occidente	PFTZ 6: Zona Franca Internacional del Atlántico	PFTZ 7: Zona Franca Brisa S.A	PFTZ 8: Zona Franca Internacional de Pereira	PFTZ 9: Zona Franca de Ibagué	PFTZ 10: Zona Franca Valle de Aburrá
Managerial Management	0,75	0,75	0,53	0,48	0,65	0,75	0,85	0,8	0,85	0,75
Commercial management	22,32	21,32	25,31	17,16	20,99	20,82	25,98	24,15	23,65	17,49
Financial management	3	2,5	2	8,5	2,5	4	2	2,5	12,5	1
Production Management	15	7	18	14	15	14	14	13	16	12
Science and Technology	5	10	10	5	5	5	5	10	5	5
Internationalization	17,32	15,32	15,32	11,99	15,32	15,32	19,98	11,99	19,98	17,32
Competitiveness level	**47,0**	**42,1**	**37,4**	**27,2**	**38,2**	**44,4**	**56,9**	**49,3**	**65,6**	**39,6**

The following figure shows the level of competitiveness of the PFTZs analyzed:

Figure 1. *General Competitiveness Level PFTZ year 2017*



From the point of view of the Business Competitiveness Model of Manuel Humberto Jimenez, the Permanent Free Trade Zones analyzed for 2017 are not competitive, because of this, it is evident that the most critical factor of the Permanent Free Trade Zones is found in financial management, this is due to the fact that the vast majority have a low profitability, taking into account that this factor is also related to the level of indebtedness, liquidity and cash flow. However, the Ibagué and Brisa Free Trade Zone located in the department of La Guajira were the best rated in this regard as they presented outstanding returns, however in their other financial indicators they are not the best, thus affecting the final score for this factor.

Similarly, it is evident that another of the critical factors is science and technology, where 50% of the Permanent Free Trade Zones under study have not implemented in the last 5 years, according to the information collected, representative projects in this aspect that promote a greater boost in competitiveness in these regions, therefore it is a worrying factor since this is one of the objectives of these Permanent Free Trade Zones.

However, the Ibague Free Trade Zones and the Brisa Free Trade Zones are the most developed ones that show that they have the procedures that the model evaluates, although they are not competitive. The Ibagué Free Trade Zone stood out for having a sustainable construction seal, which guarantees a balance between industry and the environment, it is strategically located near the main cities of the country, it has access to the main land routes of the country and excellent land access roads that connect to the port of Buenaventura, one of the main multipurpose ports in Colombia; All this means that the commercial aspect is qualified in a representative manner, however there is evidence of a lack of dynamics in sales due to the small number of users installed in the PFTZ; Furthermore, according to the information collected, it has not been able to generate enough jobs or the investments required in the region, which produces little dynamism and is a critical variable that can affect it in the long term.

Of the Brisa Free Trade Zone, it stands out that it is one of the largest complexes of the free regime in the country, it also has a single multipurpose port specialized in bulk and liquid products that allows the development of industrial, logistics and cargo handling activities , which gives it an advantage over the others; In addition to the ease of access it has to the seaport, which allows it to have a good qualification in commercial management, in addition to the internationalization factor, it stands out for the number of companies installed, the agility in customs transit processes and its presence at events and constant training for its collaborators in the free regime.

Conclusions

Regarding the diagnosis of the Permanent Free Trade Zones, it was concluded that among the factors analyzed, these have criteria in critical condition where no type of importance is given to activities such as promotion through electronic media, having the Colombian seal of sustainable constructions, the

outsourcing of processes, the number of foreign companies and the projects in Science and technology that they carry out in the region and even one of the most worrying criteria is presented in the financial part.

On the other hand, it is concluded that among the factors there are also efficient criteria for the PFTZs, such as the constant growth in sales, having different certifications both in the logistics chain and in quality standards, having equipment with a depreciation less than five years, also the short time of customs transit of the merchandise, the frequency of participation in international events and the use of inventory systematization programs. Consequently, said diagnosis makes it possible to highlight the criteria that make the performance not as expected, in such a way that the areas where the gaps are evident can be analyzed in detail compared to the other criteria of the other free trade zones.

Regarding the level of Competitiveness for the year 2017 and according to the application of the Manuel Humberto Jiménez model, it is evident that the sector of the Permanent Free Trade Zones of Colombia is not competitive, despite being a figure that seeks to boost the economy and the development of the regions where they are installed, this regime shows a decline in its competitiveness in the market, it is necessary for the government to generate strategies that seek to better optimize financial factors and science and technology in this sector.

On the other hand, the purpose for which these projects are created is to boost the economy, competitiveness, job creation, planning and implementation of projects in the regions where they are installed. With the development of this research, it was observed that contracting is a positive criterion, since this is in accordance with the commitments acquired for the creation of the free trade zone. However, once installed, it is evident that it is difficult for them to maintain themselves.

Finally, the model, proposed by Manuel Humberto Jiménez, could be applied to the Permanent Free Trade Zones sector and allowed a comparative analysis, evaluating various organizational areas, which allowed us to understand that there is a synergy between all the components of the organization, and that thus The managerial factor is properly managed by a manager with all the competencies and capacities to do so, if the rest of the areas of the organization do not work properly, the results will be inefficient, therefore, properly manage all organizational areas and maintaining control over them will contribute to making the right decisions and generating a competitive advantage.

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